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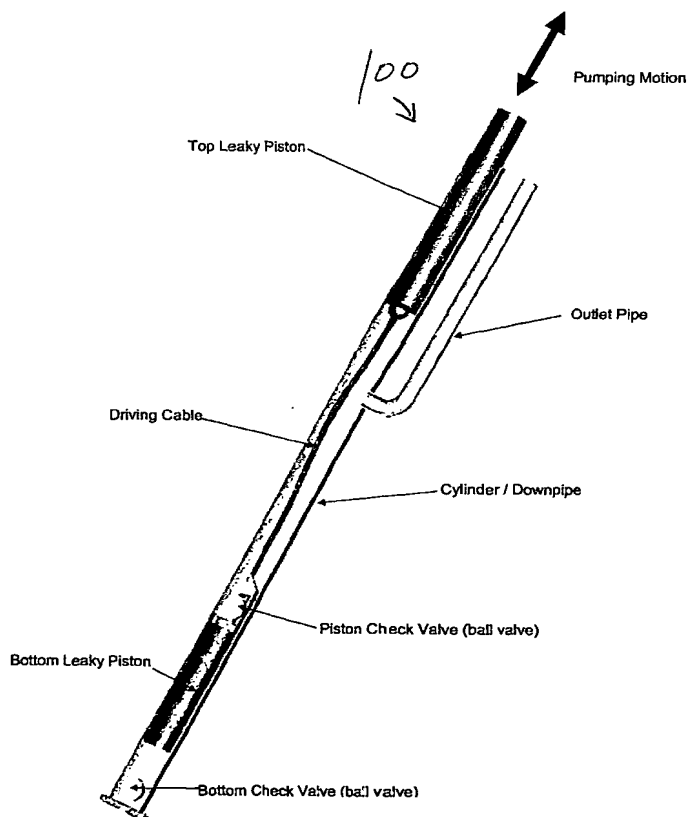
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(54) Title: DEEP WELL IRRIGATION PUMP



(57) Abstract: Provided herein are exemplary
embodiments of an efficient pump apparatus. In one
embodiment the pump apparatus comprises a piston
assembly loosely disposed within a cylinder. The
piston assembly includes a driving cable connecting
a top leaky piston and a bottom leaky piston having
a check valve connected thereto. The cylinder includes
an outlet pipe at an upper portion thereof and a check
valve located at a lower end of the cylinder. The
pistons move in the cylinder at a velocity relative
to the conduit such that as the pistons move along
the cylinder they create a substantial tortuous leak
path forming a hydrodynamic seal between the
pistons and the cylinder.



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